



Cox[®]
Turbine Flow Meters

Turbine Flow Meter Manifold System

DESCRIPTION

The COX Turbine Flow Meter Manifold System is designed for applications where extremely wide rangeability, automatic operation and high accuracy are required. The system works well with applications like jet engine cells, fuel control stands and flow meter calibrating devices. The system provides flow ranges of 100:1, 1000:1 or higher for high pressure systems and attain an accuracy of $\pm 0.5\%$ of flow rate.

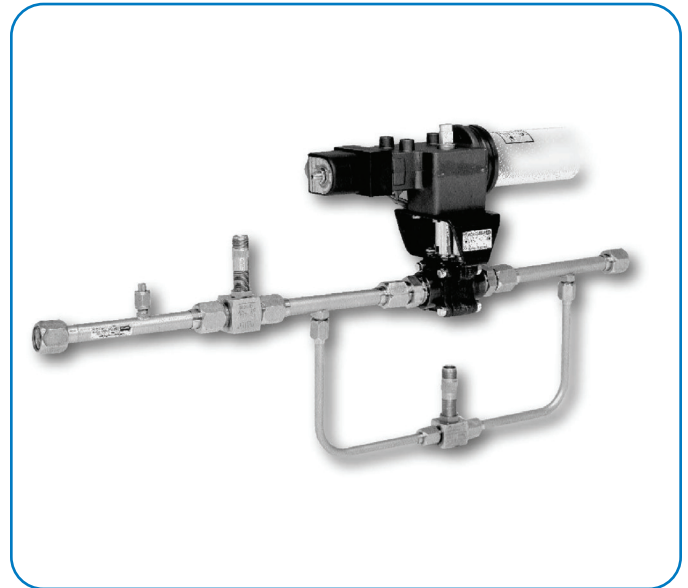
The Manifold System consists of a stainless steel manifold with flow straightening sections, two or three turbine flow meters and one (or two, in a three-element system) air-operated electrically controlled shutoff valve. The COX microprocessor-based instrumentation meters the flow rate of liquid and signals the valve operation, when needed. This instrumentation controls automatic switch-over from one meter to another, as well as controlling valve operation for complete automatic range coverage. Operation of the manifold system is automatic and fail-safe as N.O. valves are used. Air or power failure will not cause turbine flow meter overspeeding.

SYSTEM FEATURES

- Rangeability of up to 3000:1
- Automatic operation
- 0.5% system accuracy
- Fail-safe operation
- Prevents overspeeding of meters
- Flow straighteners
- Stainless steel tubing
- High pressure systems

MODEL 4050 FLOW COMPUTER FEATURES

- Monitors up to three independent flow sensors
- Provides automatic switching for manifold applications
- Select mass or flow rate display via unique handheld remote or front panel key pad
- Provides temperature compensation with RTD input
- Offers RS485 communications port for PC interface
- User friendly data entry and setup
- Program or reprogram calibration data and unit setup via the RS485 interface



APPLICATIONS

Users who need to manifold up to three turbine meters for flow ranges to 30,000:1, such as:

- Engine test cell applications monitoring:
 - ◊ Fuel consumption
 - ◊ Inventory management
 - ◊ Coolant flow rates
- Hydraulic power components performance testing applications monitoring:
 - ◊ Power steering systems
 - ◊ Precision control valves
 - ◊ Hydraulic motors

Users who need to:

- Replace COX 8500 and 8550 modular electronics systems
- Replace COX Series 12 glass tube variable area meters and who want to create a new system offering the benefits of:
 - ◊ More flexibility to reprogram if flow conditions change
 - ◊ Ability to interface with other data acquisition systems
 - ◊ Much lower cost



Badger Meter

CXX-DS-01848-EN-03 (November 2021)

Product Data Sheet

TURBINE SPECIFICATIONS

Flow Ranges	See " Flow Rate Tables " on page 3	
Accuracy	Standard flow meters:	$\pm 0.5\%$ of flow rate
	Size 6 flow meters:	$\pm 0.6\%$ of flow rate
Pressure Range	Size 6...12:	3000 psi
	Size 16:	2500 psi
	Size 20...32:	2000 psi
Valves	Air operated, electrically actuated, cast iron body	
Solenoid Valve	Class 1, Group D Explosion	
Air Supply	80 psi	
End Connectors	37° flared (female)	



Figure 1: Turbines and flow straighteners

FLOW RATE TABLES

Two Element Systems Flow Rate

Nominal Flow Range GPM	Part Number	A Flow Meter No. 1	B Flow Meter No. 2	C Ball Valve Size	D	E	F	G Ref.	H 33656-configuration	Max. Operating Pressure at 180° F
0.007...0.75	90G0054R4010	LF 6-000	LF 6-2	3/8	24.00	6.00	6.25	5.00	-6	3000 psi
0.012...1.25	90G0054R4010	LF 6-00	LF 6-3	3/8	24.00	6.00	6.25	5.00	-6	3000 Psi
0.025...2.5	90G0054R4020	LF 6-0	AN 8-4	1/2	24.00	6.00	6.25	5.00	-8	3000 psi
0.050...5.0	90G0054R4020	LF 6-1	AN 8-6	1/2	24.00	6.00	6.25	5.00	-8	3000 psi
0.075...7.5	90G0054R4020	LF 6-2	AN 8	1/2	24.00	6.00	6.25	5.00	-8	3000 psi
0.125...12.5	90G0054R4120	LF 6-3	AN 10	3/4	26.00	6.00	6.38	6.25	-10	3000 psi
0.06...30	90G0054R4130	LFC 6-3	ANC 12	3/4	29.00	6.00	6.38	7.50	-12	3000 psi
0.06...65	90G0054R4070	LFC 6-3	ANC 16	1	34.00	6.00	7.00	10.00	-16	2500 psi
0.20...15.5	90G0054R4100	ANC 8-4	ANC 10	3/4	27.00	6.00	6.38	6.25	-10	3000 psi
0.25...25	90G0054R4060	AN 8-4	AN 12	3/4	29.00	6.00	6.38	7.50	-12	3000 psi
0.50...50	90G0054R4090	AN 8-6	AN 16	1	34.00	6.00	7.00	10.00	-16	2500 psi
0.75...75	90G0054R4030	AN 8	AN 20	1 1/4	37.00	6.00	8.44	11.00	-20	2000 psi
1.25...125	90G0054R4140	AN 10	AN 24	1 1/2	42.00	6.00	8.94	12.00	-24	2000 psi
1.0...300	90G0054R4180	AN 10	AN 32	2	49.00	8.00	9.09	14.00	-32	2000 psi
1.5...150	90G0054R4190	AN 12	AN 24	1 1/2	42.00	6.00	8.94	12.00	-24	2000 psi
1.5...300	90G0054R4040	AN 12	AN 32	2	50.00	8.00	9.09	14.00	-32	2000 psi

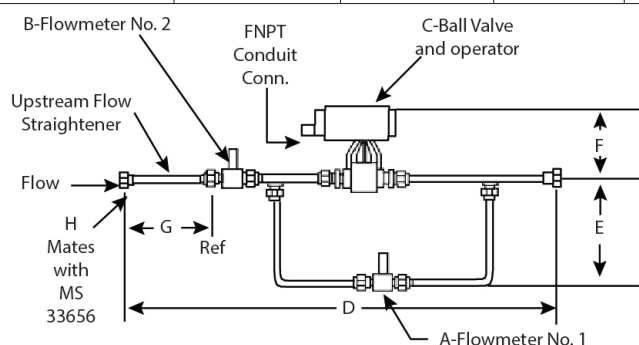


Figure 2: Two element system

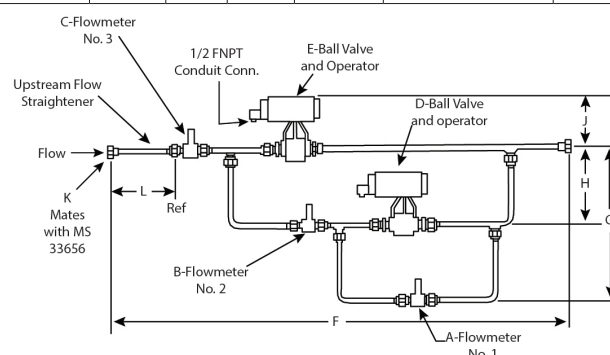


Figure 3: Three element system

Flow meter manifold can be in any position

Three Element Systems Flow Rate

Nominal Flow Range gpm	Part Number	A Flow Meter No. 1	B Flow Meter No. 2	C Flow Meter No. 3	D Ball Valve Size in.	E Ball Valve Size in.	F in.	G in.	H in.	J in.	K 33656 Configuration	L in.	Max. Operating Pressure at 180° F
0.007...7.5	90G0058R5010	LF 6-000	LF 6-2	AN 8	3/8	1/2	40.00	15.00	9.00	6.25	-8	5.00	3000 psi
0.012...12.5	90G0058R5020	LF 6-00	LF 6-3	ANC 10	3/8	3/4	42.00	15.00	9.00	6.38	-10	6.25	3000 psi
0.025...25	90G0058R5030	LF 6-0	AN 8-4	AN 12	1/2	3/4	45.00	15.00	9.00	6.38	-12	7.50	3000 psi
0.050...50	90G0058R5040	LF 6-1	AN 8-6	AN 16	1/2	1	48.00	15.00	9.00	7.00	-16	10.00	2500 psi
0.075...75	90G0058R5080	LF 6-2	AN 8	AN 20	1/2	1-1/4	50.00	15.00	9.00	8.44	-20	11.00	2000 psi
0.125...125	90G0058R5050	LF 6-3	AN 8	AN 24	3/4	1-1/2	57.00	16.00	10.00	8.94	-24	12.00	2000 psi
0.006...310	90G0058R5090	LFC 6-000	ANC 8-4	ANC 32	1/2	2	57.00	15.50	9.50	9.09	-32	14.00	2000 psi

CONFIGURATIONS

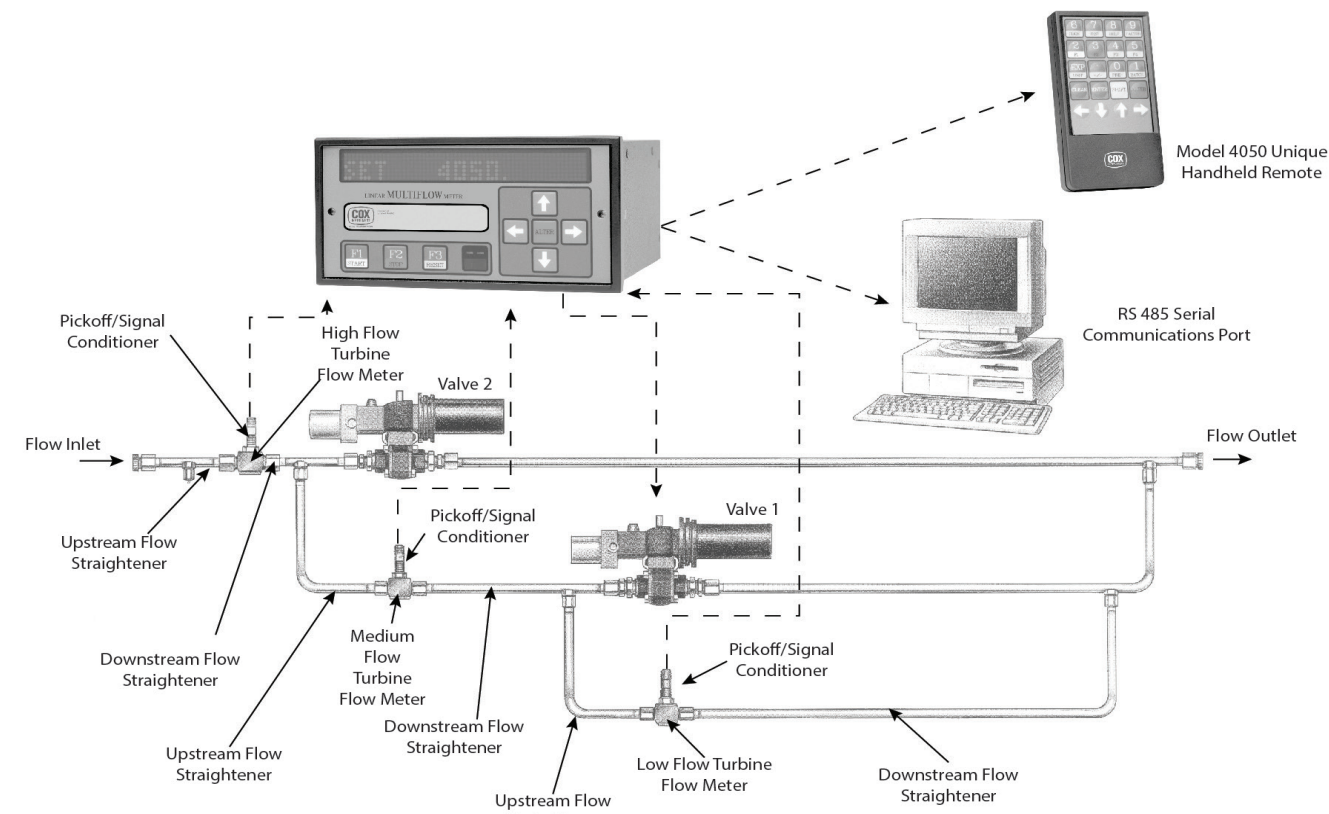


Figure 4: Configurations

MODEL 4050 FLOW COMPUTER SPECIFICATIONS

Information Display	Large alphanumeric exceptionally wide viewing angle Configure units of measurement to suit application (gpm, pph, and more) Red LED dot matrix 5.98 in. (152 mm) wide x 0.71 in. (18 mm) high Six characters for rate and frequency, 8 characters for total
Data Entry	Calibration data entered with handheld infrared remote control Passcode protected Can inhibit one remote control reception, if two units are side by side
Inputs	Maximum of three voltage pulse frequency inputs Frequency range 0.5 Hz...20 kHz Programmable frequency and flow rate cutoffs
Regulated Output	24V DC
Dimensions	Panel mounted steel double DIN enclosure, 7.56 in. (192.02 mm) wide x 3.78 in. (96.01 mm) high x 8.27 in. (210.06 mm) deep. Panel cutout size, 7.32 in. (185.93 mm) wide x 3.62 in. (91.95 mm) high (+0.04 in./-0.0 in.).
Power Requirements	220...240V AC 50/60 Hz or 110...120V AC 50/60 Hz.

Control. Manage. Optimize.

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